

2006 Aquatics Study Concepts

Students should be able to:

1. Describe the process of the hydrologic cycle including evaporation, condensation, precipitation, transpiration, and aquifer recharge. **(Earth Sciences - Energy in the Earth System 5.a and Biochemical Cycles 7.a,b,c;**

Biology/Life Sciences - Ecology 6.d)

2. Describe water in its three states of matter, the structure of the water molecule and relate it to the ability of

water to dissolve substances, cohesion characteristics, and capillary action. **(Biology/Life Sciences - Ecology 6.e;**

Earth Sciences - Biochemical Cycles 7.a,b,c,d)

3. Understand and be able to discuss the various processes of contamination of well water and aquifers of the

United States and California. **(Chemistry - Acids and Bases 5.d)**

4. Describe proper well construction practices. Know what well head protection is and what constitutes a

wellhead protection program. **(Earth Sciences - California Geology 9.a,b,c)**

5. Discuss the Federal Clean Water Act, its importance and how drinking water is monitored under the Safe

Drinking water Act. **(Biology/Life Sciences - Ecology 6.b)**

6. Know and discuss the Federal and State agencies that provide oversight of water resources.

7. Define "use" as it applies to Water Quality Standards and special water resource classifications and how they

relate to the level of planning required for resource protection.

8. Discuss coliform bacteria and explain why they are used as indicator organisms in drinking water or

recreational water that might be ingested. **(Biology/Life Sciences - Ecology 6.b,e)**

9. Discuss what causes lead contamination in drinking water and what can be done to decrease it.

(Investigation

and Experimentation 1.a)

10. Discuss potential agricultural and urban impacts upon reservoirs, streams, rivers, lakes, and groundwater.

(Investigation and Experimentation 1.a)

11. Describe how aquatic life (fish, insects, and plants) can be used to determine the water quality condition of a

water body. **(Biology/Life Sciences - Ecology 6.b,c)**

12. Understand the ecology of wetlands such as marshes, bays, estuaries, lagoons, etc.

(Biology/Life Sciences -

Ecology 6.a,b,c,d,e,f,g,h)

13. Discuss the major viral, bacterial, and protozoal pollutants of water bodies, such as, chryptosporidium, giardia,

etc. **(Biology/Life Sciences - Ecology 6.a,b,c,d,e,f,g,h)**

14. Understand the processes of primary, secondary, and tertiary water treatment plants.

(Chemistry - Solutions

6.f and Reaction Rates 8.b)

15. Know and understand the National Environmental Policy Act of 1969, that defines the role of environmental

impact or assessment statements, and reports (Environmental Impact Statement and Report or Environmental

Analysis) as they relate to national water resources. **(Investigation and Experimentation 1.m)**

